

21570

Cassette auto radio 22DC 570/00

22DC 670/00

Service
Service
Service

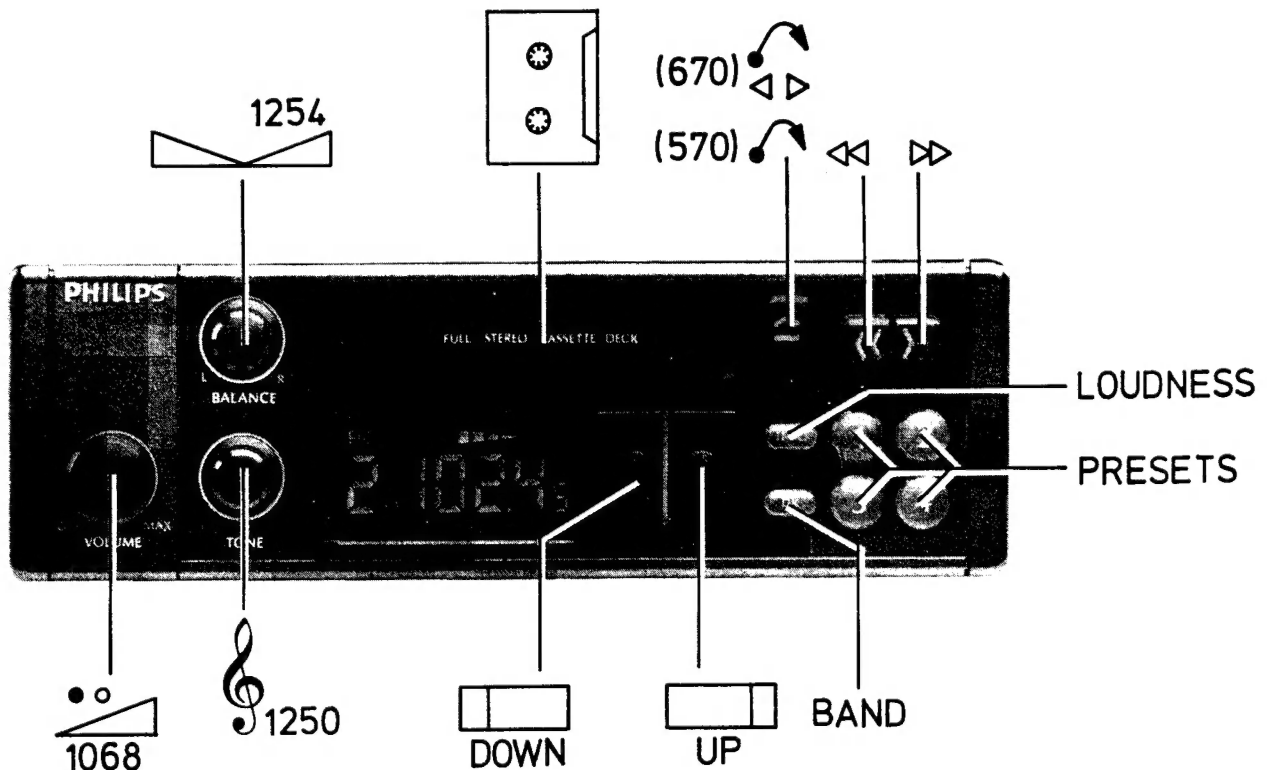
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MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk

+ R570

R670

12171

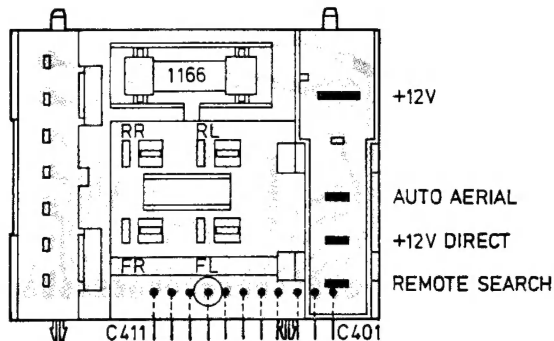
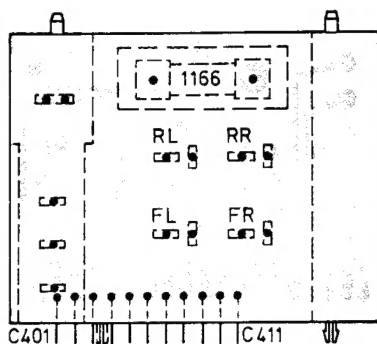
Service Manual

12 V 

43 029 A12

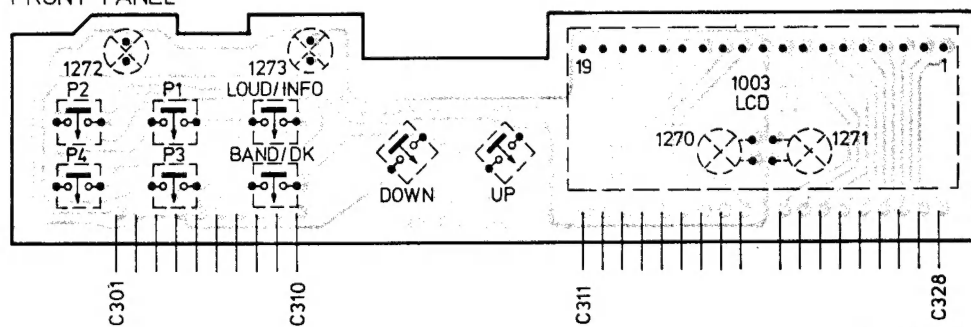
1053 CONNECTING BLOCK P.B. ASSY

- C401 = REMOTE SEARCH
- C402 = +12V SWITCHED
- C403 = +12V DIRECT
- C404 = N.C.
- C405 = AUTO.AERIAL
- C406 = +FL
- C407 = -L
- C408 = +RL
- C409 = -R
- C410 = +FR
- C411 = +RR



42 829 B12

FRONT PANEL



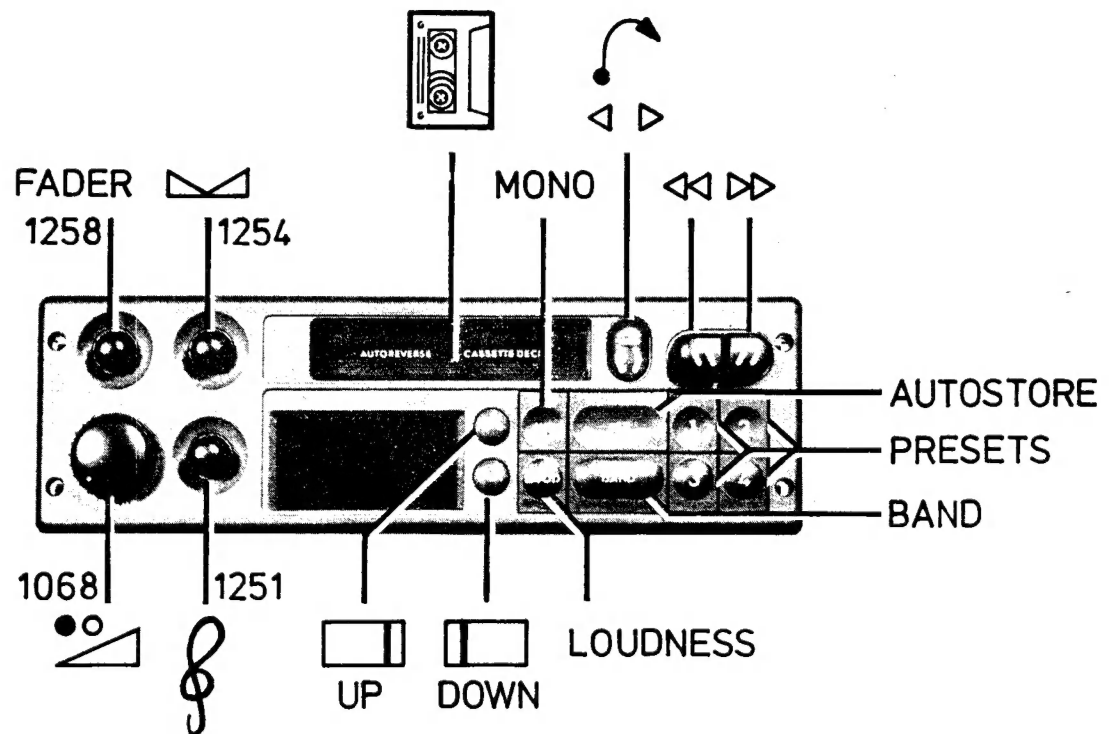
43 026 B12

Service Service Service

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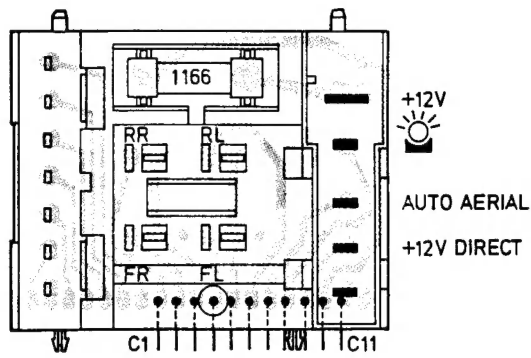
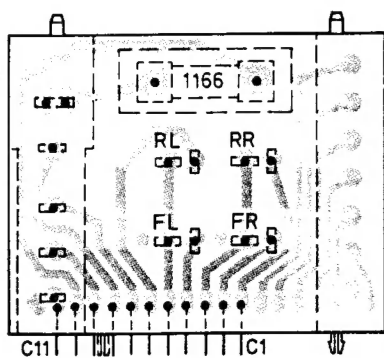
12 V 



44 254 A11

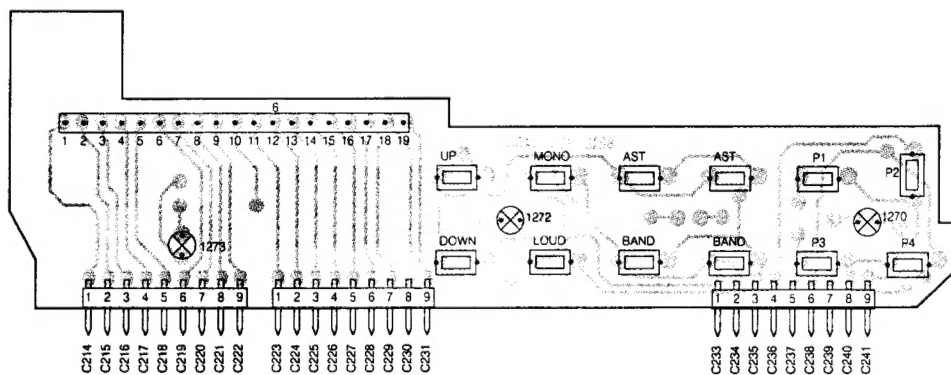
1053 CONNECTING BLOCK P.B. ASSY

C11 = N.C.
 C10 = +12V SWITCHED
 C9 = +12V DIRECT
 C8 = EXT. ILL.
 C7 = AUTO.AERIAL
 C4 = +FL
 C5 = -L
 C6 = +RL
 C3 = -R
 C2 = +FR
 C1 = +RR










44 215 B11

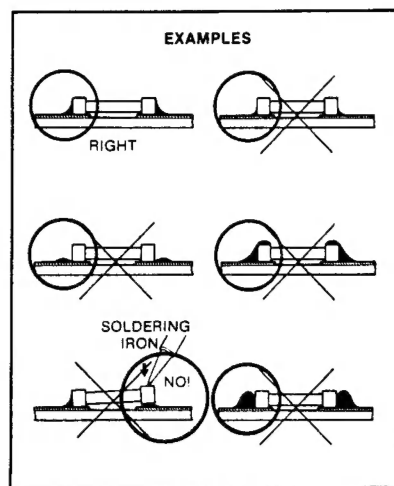
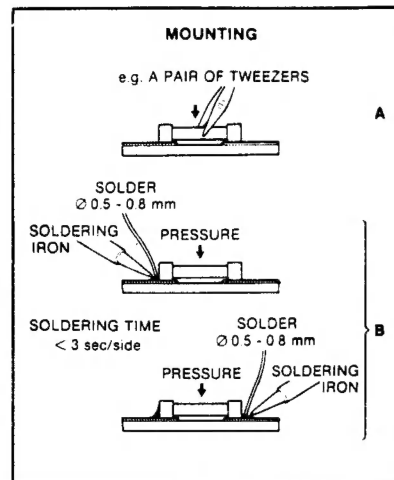
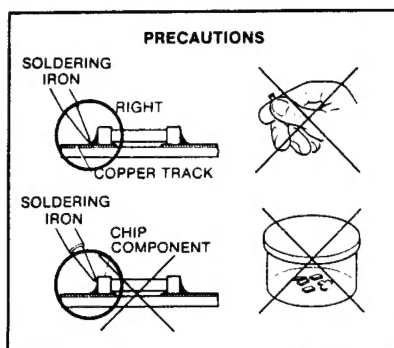
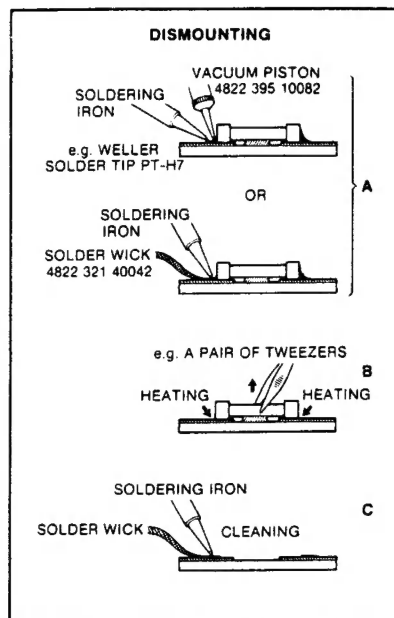
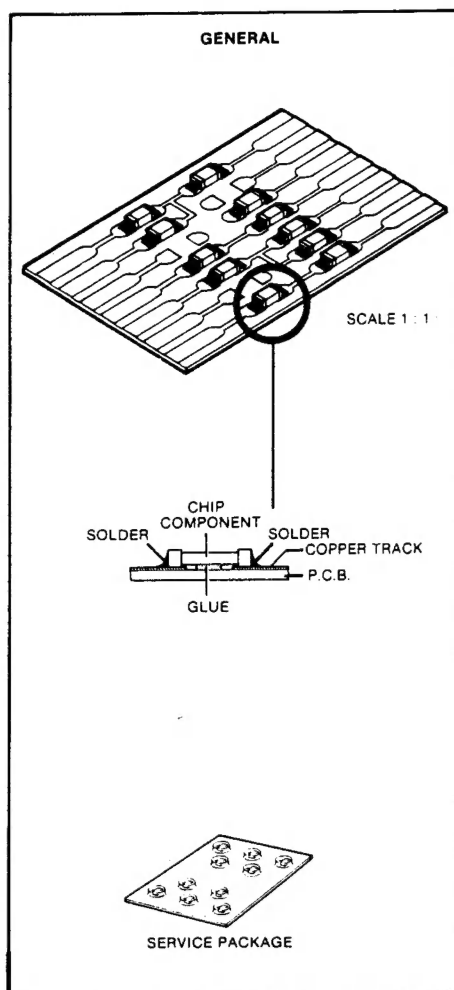
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PCB.01231
 727-838

- MISCELLANEOUS -							
1055	IAC-Thifi	4822 214 51676		2166	100nF 20%	50V	4822 122 33104
1056	SDK-Thifi	4822 214 51674		2168	100nF 20%	50V	4822 122 33104
1057	STEREO DEC. Thifi	4822 214 51677		2172	100nF 20%	50V	4822 122 33104
1059	Cer.Filter 10.7 MHz	4822 242 71889		2178	2200µF	10V	4822 124 41452
1060	Cer.Filter 10.7 MHz	4822 242 71889		2180	2200µF	10V	4822 124 41452
1061	Crystal 4 MHz	4822 242 71881		2186	100nF 20%	50V	4822 122 33104
1062	Crystal 4 MHz	4822 242 71882		2187	100nF 20%	50V	4822 122 33104
1064	Cer.Filter 10.7 MHz	4822 242 71883		2192	33 pF	50V	4822 122 33215
1065	Cer.Filter 10.7 MHz	4822 242 71883		2193	33 pF	50V	4822 122 33215
1068	Potm.Volume 2X50kΩ	4822 102 40082		2196	2200µF	16V	4822 124 22412
1166	Fuse 2.5A(T)	4822 253 30026		2201	100pF 20%	50V	4822 122 33104
1250/1251	Potm.Tone 2X100kΩ	4822 102 30462		2204	2.2µF	40V	4822 124 20706
1254	Potm.Balance 100kΩ	4822 100 20663		2206	4.7nF	50V	4822 122 33217
1270÷1274	Lamp 14V-40mA	4822 134 40855		2208	4.7nF	50V	4822 122 33217
							
2050	100nF 20%	50V	4822 122 33104	3050	1k		4822 111 91516
2051	47 nF		4822 122 33211	3051	330Ω		4822 111 91501
2055	100nF 20%	50V	4822 122 33104	3052	10E		4822 111 91519
2056	10 nF		4822 122 31728	3053	10k Trimpotmeter		4822 100 20166
2057	47 nF		4822 122 33211	3054	2k7		4822 111 91525
2061	2.2µF	40V	4822 124 20706	3055	10k Trimpotmeter		4822 100 20166
2062	150pF		4822 122 33181	3056	4k7		4822 111 91532
2063	270pF		4822 122 33216	3057	750E		4822 111 91505
2064	220nF 20%	50V	4822 122 32916	3060	10E		4822 111 91519
2068	220nF 20%	50V	4822 122 32916	3061	3k3		4822 111 91526
2070	390pF 20%	50V	4822 122 33172	3064	39k		4822 111 91528
2074	220nF 20%	50V	4822 122 32916	3065	2k2		4822 111 91522
2076	220nF 20%	50V	4822 122 32916	3067	620k		4822 111 91503
2083	27 pF		4822 122 33214	3068	10E		4822 111 91519
2088	10 pF		4822 122 33212	3069	3k9		4822 111 91527
2089	33 pF 20%	50V	4822 122 33215	3070	8k2		4822 111 91507
2090	270pF 20%	50V	4822 122 33216	3072	22k		4822 111 91523
2091	270pF 20%	50V	4822 122 33216	3073	15k		4822 111 91498
2092	10 nF 20%	50V	4822 122 33177	3074	1k		4822 111 91516
2097	220nF 20%	50V	4822 122 32916	3075	10k		4822 111 91517
2099	150pF	50V	4822 122 33222	3076	2k7		4822 111 91525
2106	100nF 20%	50V	4822 122 33104	3077	330E		4822 111 91501
2109	22 pF	50V	4822 122 33213	3079	39k		4822 111 91528
2110	100nF 20%	50V	4822 122 33104	3080	39k		4822 111 91528
2114	4.7nF	50V	4822 122 33217	3082	91E		4822 111 91508
2115	3.3nF	50V	4822 122 33219	3083	2k2		4822 111 91522
2118	2200µF	6.3V	4822 124 41453	3084	39k		4822 111 91528
2120	10 pF	50V	4822 122 33212	3086	560E		4822 111 91533
2121	10 pF	50V	4822 122 33212	3087	470E		4822 111 91531
2122	820pF	50V	4822 122 33218	3090	4k7		4822 111 91532
2123	820pF	50V	4822 122 33218	3091	220k		4822 111 91524
2125	820pF	50V	4822 122 33218	3095	1k		4822 111 91516
2126	820pF	50V	4822 122 33218	3096	1k		4822 111 91516
2132	2.7nF	50V	4822 122 33176	3099	22k		4822 111 91523
2133	2.7nF	50V	4822 122 33176	3100	220k		4822 111 91524
2134	220nF 20%	50V	4822 122 32916	3104	18k		4822 111 91521
2135	220nF 20%	50V	4822 122 32916	3105	18k		4822 111 91521
2136	100nF 20%	50V	4822 122 33104	3106	1k		4822 111 91516
2140	220µF	10V	4822 124 22409	3107	39k		4822 111 91528
2141	5.6nF	50V	4822 122 33221	3108	10k		4822 111 91517
2142	5.6nF	50V	4822 122 33221	3110	470E		4822 111 91531
2150	220nF 20%	50V	4822 122 32916	3111	470E		4822 111 91531
2151	220nF 20%	50V	4822 122 32916	3112	390k		4822 111 91529
2156	1.8nF	50V	4822 122 33144	3113	390k		4822 111 91529
2157	1.8nF	50V	4822 122 33144	3116	1M		4822 111 91509
2158	100nF	50V	4822 122 33209				
2162	820pF	50V	4822 122 33218				
2164	820pF	50V	4822 122 33218				







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1 pF	5%	4822 122 32479		4,7 E	5%	5322 111 90376		6,8 k	2%	4822 111 90544		
1,2 pF	5%	4822 122 33013		5,1 E	5%	4822 111 90393		7,5 k	2%	4822 111 90276		
1,5 pF	5%	4822 122 31792		5,6 E	5%	4822 111 90394		8,2 k	2%	5322 111 90118		
1,8 pF	5%	4822 122 32087		6,2 E	5%	4822 111 90395		9,1 k	2%	4822 111 90373		
2,2 pF	5%	4822 122 32425		6,8 E	5%	4822 111 90254		10 k	2%	4822 111 90249		
3,3 pF	5%	4822 122 32079		7,5 E	5%	4822 111 90396		11 k	2%	4822 111 90337		
3,9 pF	5%	4822 122 32081		8,2 E	5%	4822 111 90397		12 k	2%	4822 111 90253		
4,7 pF	5%	4822 122 32082		9,1 E	5%	4822 111 90398		13 k	2%	4822 111 90509		
5,6 pF	5%	4822 122 32506		10 E	2%	5322 111 90095		15 k	2%	4822 111 90196		
6,8 pF	5%	4822 122 32507		11 E	2%	4822 111 90338		16 k	2%	4822 111 90346		
8,2 pF	5%	4822 122 32083		12 E	2%	4822 111 90341		18 k	2%	4822 111 90238		
10 pF	5%	4822 122 31971		13 E	2%	4822 111 90343		20 k	2%	4822 111 90349		
12 pF	5%	4822 122 32139		15 E	2%	4822 111 90344		22 k	2%	4822 111 90251		
15 pF	5%	4822 122 32504		16 E	2%	4822 111 90347		24 k	2%	4822 111 90512		
18 pF	5%	4822 122 31769		18 E	2%	5322 111 90139		27 k	2%	4822 111 90542		
22 pF	10%	4822 122 31837		20 E	2%	4822 111 90352		30 k	2%	4822 111 90216		
27 pF	5%	4822 122 31966		22 E	2%	4822 111 90186		33 k	2%	5322 111 90267		
33 pF	5%	4822 122 31756		24 E	2%	4822 111 90355		36 k	2%	4822 111 90514		
39 pF	5%	4822 122 31972		27 E	2%	5322 111 90105		39 k	2%	5322 111 90108		
47 pF	5%	4822 122 31772		30 E	2%	4822 111 90356		43 k	2%	4822 111 90363		
56 pF	5%	4822 122 31774		33 E	2%	4822 111 90357		47 k	2%	4822 111 90543		
68 pF	5%	4822 122 31961		36 E	2%	4822 111 90359		51 k	2%	5322 111 90274		
82 pF	10%	4822 122 31839		39 E	2%	4822 111 90361		56 k	2%	4822 111 90573		
100 pF	5%	4822 122 31765		43 E	2%	5322 116 90125		62 k	2%	5322 111 90275		
120 pF	5%	4822 122 31766		47 E	2%	4822 111 90217		68 k	2%	4822 111 90202		
150 pF	5%	4822 122 31767		51 E	2%	4822 111 90365		75 k	2%	4822 111 90574		
180 pF	2%	4822 122 31794		56 E	2%	4822 111 90239		82 k	2%	4822 111 90575		
220 pF	5%	4822 122 31965		62 E	2%	4822 111 90367		91 k	2%	5322 111 90277		
270 pF	5%	4822 122 32142		68 E	2%	4822 111 90203		100 k	2%	4822 111 90214		
330 pF	10%	4822 122 31642		75 E	2%	4822 111 90371		110 k	2%	5322 111 90269		
390 pF	5%	4822 122 31771		82 E	2%	4822 111 90124		120 k	2%	4822 111 90568		
470 pF	5%	4822 122 31727		91 E	2%	4822 111 90375		130 k	2%	4822 111 90511		
560 pF	5%	4822 122 31773		100 E	2%	5322 111 90091		150 k	2%	5322 111 90099		
680 pF	5%	4822 122 31775		110 E	2%	4822 111 90335		160 k	2%	5322 111 90264		
820 pF	5%	4822 122 31974		120 E	2%	4822 111 90339		180 k	2%	4822 111 90565		
1 nF	10%	5322 122 31647		130 E	2%	4822 111 90164		200 k	2%	4822 111 90351		
1,2 nF	5%	4822 122 31807		150 E	2%	5322 111 90098		220 k	2%	4822 111 90197		
1,5 nF	10%	4822 122 31781		160 E	2%	4822 111 90345		240 k	2%	4822 111 90215		
1,8 nF	10%	4822 122 32153		180 E	2%	5322 111 90242		270 k	2%	4822 111 90302		
2,2 nF	10%	4822 122 31644		200 E	2%	4822 111 90348		300 k	2%	5322 111 90266		
2,7 nF	10%	4822 122 31783		220 E	2%	4822 111 90178		330 k	2%	4822 111 90513		
3,3 nF	10%	4822 122 31969		240 E	2%	4822 111 90353		360 k	2%	4822 111 90515		
3,9 nF	10%	4822 122 32566		270 E	2%	4822 111 90154		390 k	2%	4822 111 90182		
4,7 nF	10%	4822 122 31784		300 E	2%	4822 111 90156		430 k	2%	4822 111 90168		
5,6 nF	10%	4822 122 31916		330 E	2%	5322 111 90106		470 k	2%	4822 111 90161		
6,8 nF	10%	4822 122 31976		360 E	1%	4822 111 90288		510 k	2%	4822 111 90364		
10 nF	10%	4822 122 31728		360 E	2%	4822 111 90358		560 k	2%	4822 111 90169		
12 nF	10%	5322 122 31648		390 E	2%	5322 111 90138		620 k	2%	4822 111 90213		
15 nF	10%	4822 122 31782		430 E	2%	4822 111 90362		680 k	2%	4822 111 90368		
18 nF	10%	4822 122 31759		470 E	2%	5322 111 90109		750 k	2%	4822 111 90369		
22 nF	10%	4822 122 31797		510 E	2%	4822 111 90245		820 k	2%	4822 111 90205		
27 nF	10%	4822 122 32541		560 E	2%	5322 111 90113		910 k	2%	4822 111 90374		
33 nF	10%	4822 122 31981		620 E	2%	4822 111 90366		1 M	2%	4822 111 90252		
47 nF	10%	4822 122 32542		680 E	2%	4822 111 90162		1,1 M	5%	4822 111 90408		
56 nF	10%	4822 122 32183		750 E	2%	5322 111 90306		1,2 M	5%	4822 111 90409		
100 nF	10%	4822 122 31947		820 E	2%	4822 111 90171		1,3 M	5%	4822 111 90411		
180 nF	10%	4822 122 32915		910 E	2%	4822 111 90372		1,5 M	5%	4822 111 90412		
220 nF	20%	4822 122 32715		1 k	2%	5322 111 90092		1,6 M	5%	4822 111 90413		
⊖  Chips 0,125 W S1206 NP0				1,1 k	2%	4822 111 90336		1,8 M	5%	4822 111 90414		
0 E	jumper	4822 111 90163		1,2 k	2%	5322 111 90096		2 M	5%	4822 111 90415		
1 E	5%	4822 111 90184		1,3 k	2%	4822 111 90244		2,2 M	5%	4822 111 90185		
1,1 E	5%	4822 111 90377		1,5 k	2%	4822 111 90151		2,4 M	5%	4822 111 90416		
1,2 E	5%	4822 111 90378		1,6 k	2%	5322 111 90265		2,7 M	5%	4822 111 90417		
1,3 E	5%	4822 111 90379		1,8 k	2%	5322 111 90101		3 M	5%	4822 111 90418		
1,5 E	5%	4822 111 90381		2 k	2%	4822 111 90165		3,3 M	5%	4822 111 90191		
1,6 E	5%	4822 111 90382		2,2 k	2%	4822 111 90248		3,6 M	5%	4822 111 90419		
1,8 E	5%	4822 111 90383		2,4 k	2%	4822 111 90289		3,9 M	5%	4822 111 90421		
2 E	5%	4822 111 90384		2,7 k	2%	4822 111 90569		4,3 M	5%	4822 111 90422		
2,2 E	5%	5322 111 90104		3 k	2%	4822 111 90198		4,7 M	5%	4822 111 90423		
2,4 E	5%	4822 111 90385		3,3 k	2%	4822 111 90157		5,1 M	5%	4822 111 90424		
2,7 E	5%	4822 111 90386		3,6 k	2%	5322 111 90107		5,6 M	5%	4822 111 90425		
3 E	5%	4822 111 90387		3,9 k	2%	4822 111 90571		6,2 M	5%	4822 111 90426		
3,3 E	5%	4822 111 90388		4,3 k	2%	4822 111 90167		6,8 M	5%	4822 111 90235		
3,6 E	5%	4822 111 90389		4,7 k	2%	5322 111 90111		7,5 M	5%	4822 111 90427		
				5,1 k	2%	5322 111 90268		8,2 M	5%	4822 111 90237		
				5,6 k	2%	4822 111 90572		9,1 M	5%	4822 111 90428		



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	Carbon film 0.2 W 70°C 5%		Ceramic plate Tuning ≤ 120 pF NP.0 2% Others -20/+80%	*a = 2,5 V b = 4 V c = 6,3 V d = 10 V e = 16 V f = 25 V g = 40 V h = 63 V j = 100 V l = 125 V m = 150 V n = 160 V q = 200 V r = 250 V s = 300 V t = 350 V u = 400 V v = 500 V w = 630 V x = 1000 V A = 1,6 V B = 6 V C = 12 V D = 15 V E = 20 V F = 35 V G = 50 V H = 75 V I = 80 V
	Carbon film 0.33 W 70°C 5%		Polyester flat foil 10%	
	Metal film 0.33 W 70°C 5%		Metalized polyester flat film 10%	
	Carbon film 0.5 W 70°C 5%		Polyester flat foil small size (Mylar) 10%	
	Carbon film 0.67 W 70°C 5%		Polysterene film/foil 1%	
	Carbon film 1.15 W 70°C 5%		Tubular ceramic	
	© Chip component		Miniature single	
			Subminiature tantalum ± 20%	

					
3117	1M	4822 111 91509	5050		4822 152 20684
3118	56k	4822 111 91535	5052		4822 157 50975
3119	56k	4822 111 91535	5054		4822 152 20677
3120	56k	4822 111 91535	5055		4822 152 20677
3121	56k	4822 111 91535	5056		4822 152 20677
3124	2M2	4822 111 91511	5057		4822 152 20679
3125	2M2	4822 111 91511	5059		4822 157 50975
3126	39k	4822 111 91528	5060		4822 152 20682
3130	390k	4822 111 91502	5061		4822 152 20683
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For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk

SERVICING HINTS

SERVICE TEST PROGRAMME

The μ C test programme can be called without first entering the security code.

μ C test

This test is called by turning the set on while keeping the P1 and P2 keys depressed.

Besides the RAM, a great number of μ C instructions are tested. If no faults occur, a special pattern will be displayed. (See fig. 1f)

The test can be stopped by turning the set off.

Display test

The display test is called by turning the set on while keeping the P1 and P3 keys depressed.

A number of easily recognizable patterns are then displayed in succession. (See figs. 1a to 1h)

If you want to make one of the patterns visible for a longer time, you only have to keep the P1 key pressed for the required time.

SECURITY CODE

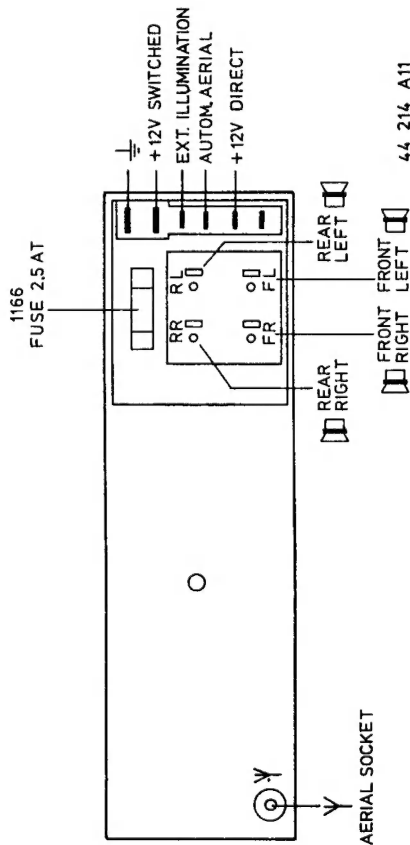
General

To reduce the risk of theft, this car radio has a built-in electronic lock. The security code has been entered in the factory and cannot be changed by the customer.

The security code consists of four figures varying between "0000" and "9999". The figures are selected by pressing the UP and DOWN keys and are entered by pressing the P1 key. If you enter a wrong code, you will hear an error beep and after 1 minute you will be given a new opportunity to enter the right code. Each time a wrong code is entered, the waiting time is doubled, so 1, 2, 4, 8 etc. with a maximum of 32 minutes.

Note: If the set is presented for repair with the security code switched on, and the customer has not stated the right code, the set will not be able to function.

Replacing the EEPROM by a "non-coded" EEPROM and/or replacing the microprocessor will not help in that case.



TECHNICAL DATA

General

Power supply
Dimensions (wxhxd)

: 14.4V DC
: 180x51x150 mm

Radio

LW : 144-288 kHz
MW : 522-1611 kHz
FM : 87.5-108 MHz
IF-AM : 10.7 MHz
IF-FM : 10.7 MHz
Sensitivity 26 dB S/R : 160 μ V (LW)
: 110 μ V (MW)
: 4 μ V (FM)
: 15 μ V
: 150 μ V

Limitation α -3dB
10 dB crosstalk

Cassette player

Number of tracks
Tape speed
Wow & Flutter
Crosstalk

: 2x2
: 4.76 cm/sec
: ≥ 0.35 %
: ≤ 30 dB

Amplifier

Output power (D ≤ 10 %)
Loudness
Tone control

: 4x5.2W ± 1 dB/4 Ω
: 7 dB at 100 Hz
: 6 dB at 10 kHz
: -9 dB at 100 Hz
: -14dB at 10 kHz

Working

ACTIVATING THE SECURITY CODE

Proceed as follows:

Switch the set on while pressing the UP key.

Now you hear a two-tone beep and the protection is activated.

The car radio will signal that the code has been activated by briefly showing in the display the character "C" at the moment of switching on the radio.

ENTRY OF THE CODE

Example: Suppose the code is 4557.

Action	Display shows	Note
- Switch on	-	-
- Press P1	-	-
- Select UP/DOWN "4"	4	first figure
- Press P1	4-	-
- Select UP/DOWN "5"	45	second figure
- Press P1	45-	-
- Select UP/DOWN "6"	456	third figure
- Press P1	456-	-
- Select UP/DOWN "7"	4567	fourth figure
- Press P1	...	confirmation tone

The radio is now on and you can operate the cassette player.

Now that the security code is active, the code should be entered again each time the supply voltage has been interrupted.

To indicate that the security code is activated, the display briefly shows the character "C" each time the set is turned on.

SWITCHING THE CODE OFF

Switch the set on while pressing the UP key. The display shows the indication "C-". Enter the right code in the way described above. Two two-tone squawks confirm that the security code is switched off.



All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).

Careless handling during repair can reduce service life drastically. When repairing, make sure that you are connected to the same potential as the mass of the set via a wrist wrap with resistance.

Keep components and tools also at this potential.

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES

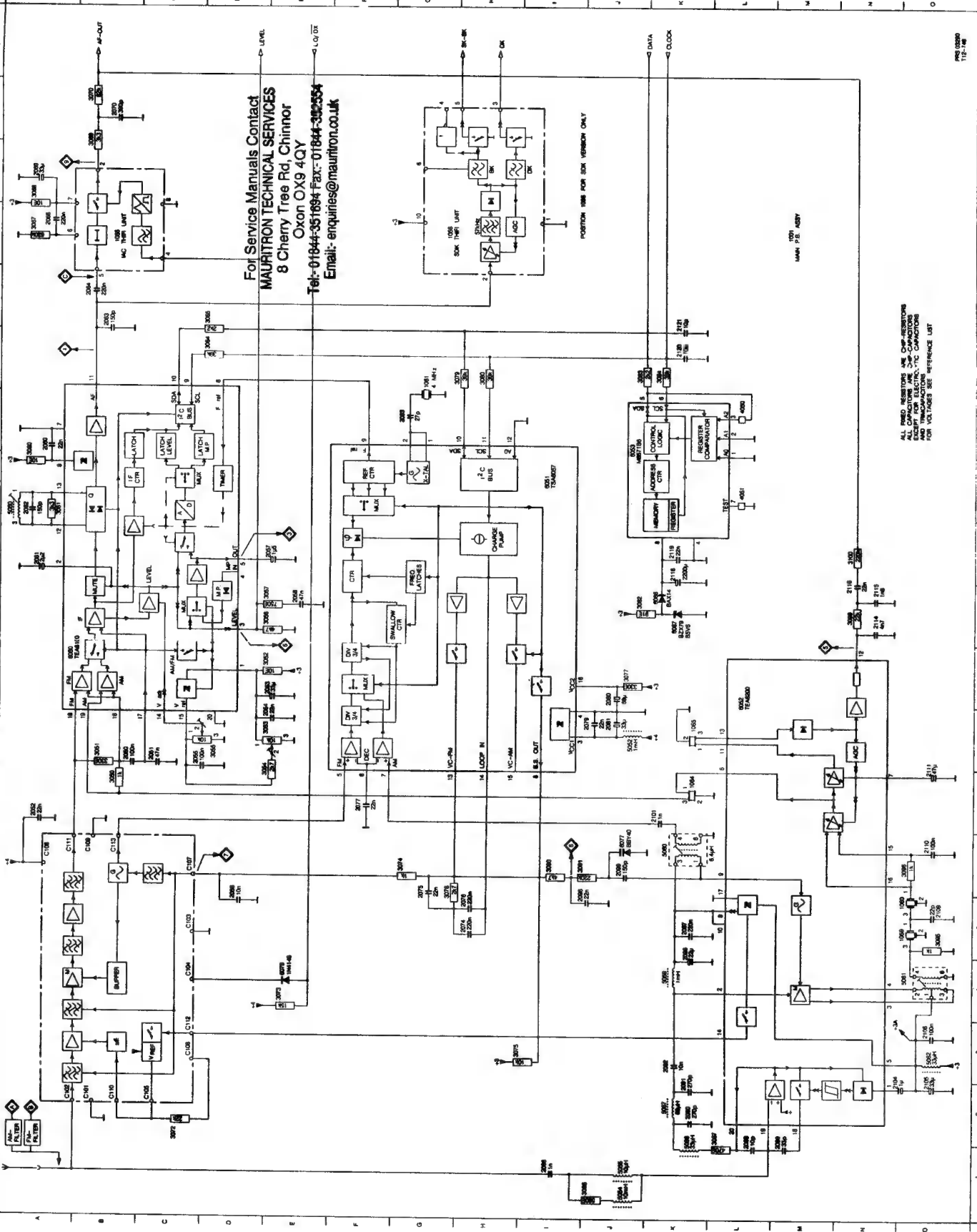
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Email: enquiries@mauritron.co.uk

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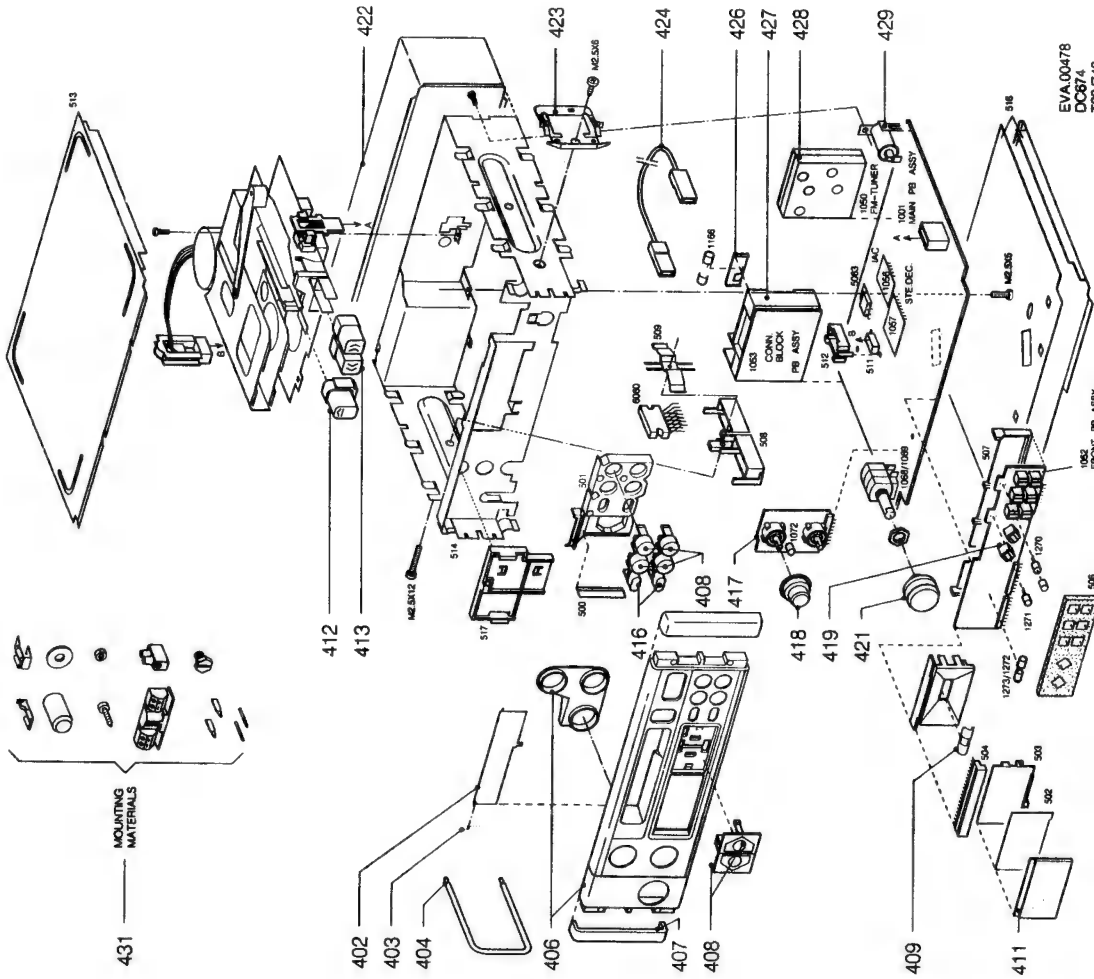


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ALL PWD RESISTORS ARE 0.1% TOLERANCE
EXCEPT FOR ELECTRIC V.C. CAPACITORS
FOR VOLTAGES SEE REFERENCE LIST

For checking and adjusting see general procedures

Check	SK	②	◇	Setting of controls	①	③
FM-Mute	FM	93 MHz, 1 mV	◇	Setting of controls	① 0dB (775 mV)	③
		no signal	◇		① -30dB ≤ ① ≤ -40dB	
26dB-SNR	FM	93 MHz, 4 μV Δf = 22.5 kHz f mod = 1 kHz	◇		① 0dB (775 mV)	
		93MHz, 4μV without mod.	◇		① ≥ 26dB	
MW	MW	990 kHz, 110 μV 1 kHz, 30% AM	◇		① 0dB (775 mV)	
		990kHz, 110 μV without mod.	◇		① ≥ 26dB	
Demodulated FM-levels	FM	93MHz, 1mV Δf = 22.5 kHz f mod = 1 kHz	◇		④ 200 mV ± 1dB	
		93 MHz, 1 mV Δf = 6.75 kHz f mod. = 1 kHz	◇		④ 50 mV ± 1dB	
Demodulated FM level	FM	93 MHz, 1 mV Δf = 3.75 kHz f mod. = 57 kHz	◇		④ 20 mV ± 1 dB	
		990 kHz, 1 mV 1kHz, 30% AM	◇		⑤ 350 mV ± 1dB	
Demodulated AM-level	MW	93 MHz, 1 mV stereo signal	◇		L ① 0dB (775 mV) R ②	
		93 MHz, 1 mV stereo-R	◇		R ② · L ① ≥ 21dB	
SDS/10dB Cross talk	FM	93 MHz, 1 mV stereo signal	◇		L ① 0dB (775 mV) R ②	
		93 MHz, 150 μV stereo-R	◇		R ② · L ① = 10dB	
Search level FM	FM	93 MHz, 25μV	◇		⑥ 2 V-DC	
		990 kHz, 70μV	◇		③ 1.75 V-DC	
Search level AM	MW	87.5 MHz	◇		⑦ ≥ 1.0 V-DC	
		108 MHz	◇		⑦ ≤ 6.0 V-DC	
VC-FM	FM	144 kHz	◇		⑧ ≥ 0.8 V-DC	
		1611 kHz	◇		⑧ ≤ 6.0 V-DC	
VC-AM	LW					
I.A.C.	FM		◇			



402	4822 443 62358	409	4822 462 71456	421	4822 413 31508
403	4822 443 62271	411	4822 130 90499	422	4822 443 30463
404	4822 492 42231	412	4822 410 26314	423	4822 492 63822
405	4822 403 53282	413	4822 410 26315	424	4822 321 21135
406	4822 423 50891	414	4822 410 26316	425	4822 256 30338
406*	4822 423 50892	415	4822 410 26333	426	4822 267 40763
406*	4822 423 50893	416	4822 410 26329	427	4822 210 10305
406*	4822 423 50894	417	4822 214 51694	428	4822 267 30883
407	4822 443 62269	418	4822 413 31509	429	4822 310 10079
408	4822 410 26328	419	4822 276 12296		

* Incl. items 402, 403, 407

For adjusting and checking see general procedures

Adjustment	SK	⊗	◇	□	⊗	□
Quadrature detector	FM	93 MHz, 10 μV	◇	□	5050	via 100 kΩ: 11-15 IC6050 ≤ 100 mV DC
α-3dB	FM	93 MHz, 1 mV Δf = 22.5 kHz f mod = 1 kHz	◇	□	3055	◇ 0dB (775 mV)
AM-search level	MW	93 MHz, 15 μV Δf = 22.5 kHz f mod = 1 kHz	◇	□	3053	◇ -3dB
		990 kHz, 70 μV	◇	□		◇ 1.75 V DC

6052 TEA6200

- 11= 6.8V AM
12= 1.3V MP-5
13= 4.8V AM
14= 8.5V AM
15= 4.8V AM
16= 4.8V AM
17= GND.
18= 4.0V AM
19= 4.0V AM
20= 3.3V AM

6053 M8571B6

- 1= GND.
2= GND.
3= GND.
4= GND.

6055 TA7705P

- 1= 8.5V
2= 3.3V, 0.0V eject
3= 0.0V >, eject
4= N.C.
5= 2.9V
6= 2.9V
7= 2.9V
8= GND.
9= 2.9V
10= N.C.
11= 2.9V
12= 2.9V
13= 2.9V
14= N.C.
15= N.C.
16= 3.3V

6050/6061 TDA1518Q

- 1= 2.2V
2= 2.2V
3= GND.
4= 2.2V
5= 6.6V
6= 14.4V
7= GND.
8= 14.4V
9= 6.6V
10= 14.4V
11= 14.4V
12= 6.6V
13= 2.2V

6063 L4918

- 1= 14.4V
2= 2.6V
3= GND.
4= GND.
5= 8.5V

6064 L4904

- 1= 12.7V
2= 8.5V
3= 5.6V
4= GND.
5= N.C.
6= 4.2V
7= 5.0V
8= 5.0V

6068/6069

- a= 0.1V loudn. on
b= 0.7V loudn. on
c= 0.1V loudn. on

6074

- a= GND.
b= 0.0V
c= 5.0V

6075

- a= GND.
b= 0.7V
c= 0.0V

- any position
position FM
position AM
position play forward
position play reverse
position eject

50 FM TUNER

- C107= VC-FM MP-7
C108= 1.4V
C109= GND.
C110= 1.7V
C111= 2.9V
C112= 0.2V
C113= 1.8V

55 IAC-THIFI

- 5= 4.3V
6= 8.1V
7= 8.4V
8= GND.

57 ST-DEC-THIFI

- 11= 5.0V mono
12= 0.2V stereo
13= 5.0V muted
14= 0.0V signal
15= 5.0V signal
16= 3.5V
17= 3.5V
18= 3.5V
19= 3.5V
20= 3.5V

50 TEA6100

- 11= 4.2V MP-4
12= 4.6V
13= 4.6V
14= 2.5V
15= 4.4V
16= 4.4V
17= 2.9V
18= 2.9V
19= 2.9V
20= GND.

51 TSA6057

- 9= 40 kHz ± 0.6Hz
10= 4.8V(SDA)
11= 4.8V(SCL)
12= GND.
13= VC-FM 1.3V-5.8V
(87.5MHz-108MHz)
14= 2.0V
15= N.C.
16= 8.3V

PRE → LOUD
LW MW FM2 FM1
0188.85
AST STEREO INFO SK DK

d.

PRE → LOUD
LW MW FM1
0177.7
AST STEREO INFO SK DK

c.

PRE → LOUD
LW MW FM2 FM1
0199.95

e.

PRE → LOUD
LW MW
0777

g.

FM2 FM1
0166.65
AST STEREO INFO SK DK

b.

FM1
0144.45
AST STEREO INFO SK DK

d.

FM2 FM1
0144.45

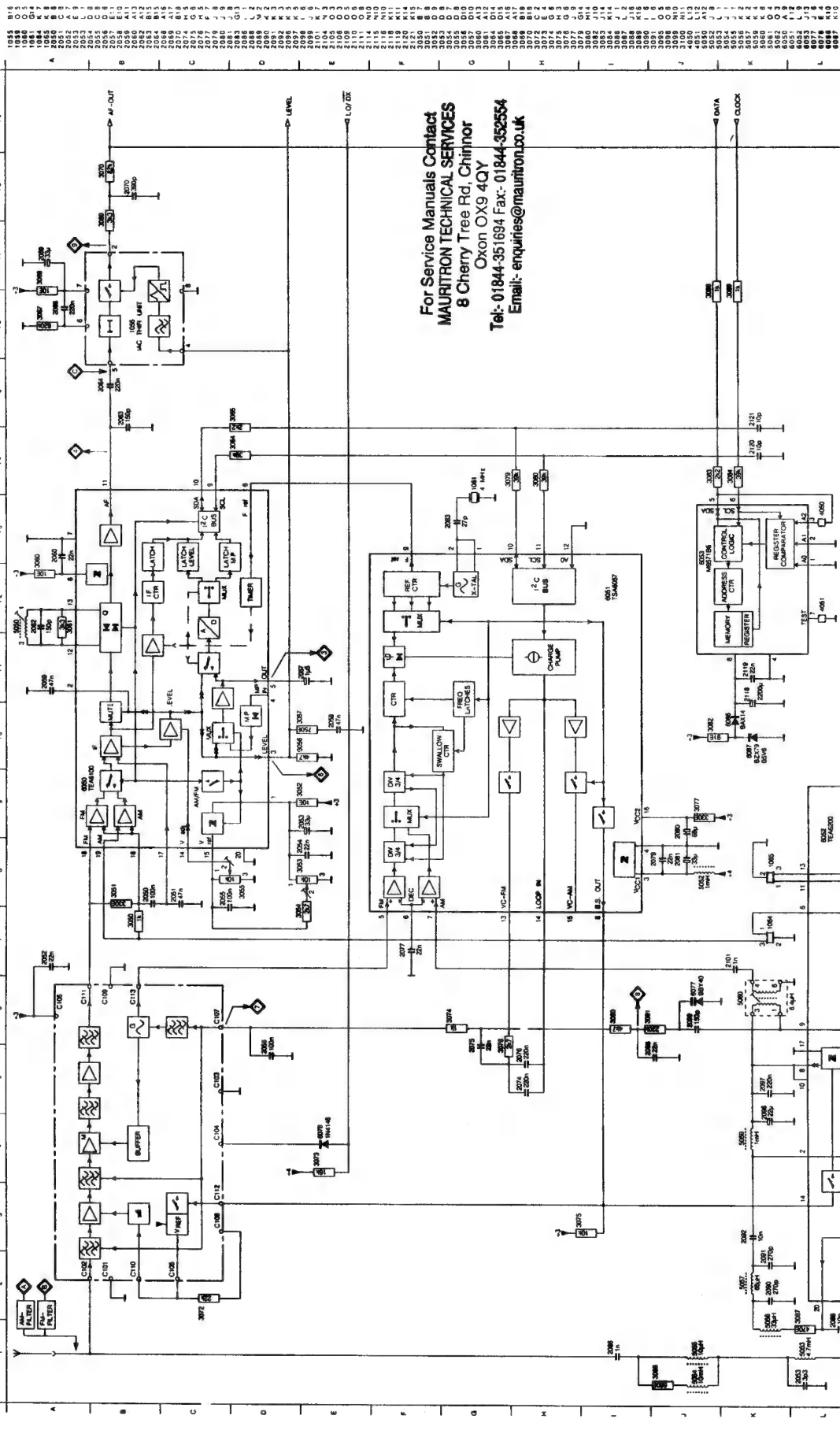
f.

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8 Cherry Tree Rd, Chinnor
Oxon OX9 4OY
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Email: enquiries@mauritron.co.uk

h.

Fig. 1

42 947 B12



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ALL USED RESISTORS ARE OHM RESISTORS
 ALL CAPACITORS ARE CAPACITORS
 AND INDUCTORS ARE INDUCTORS
 FOR VOLTAGES SEE REFERENCE LIST

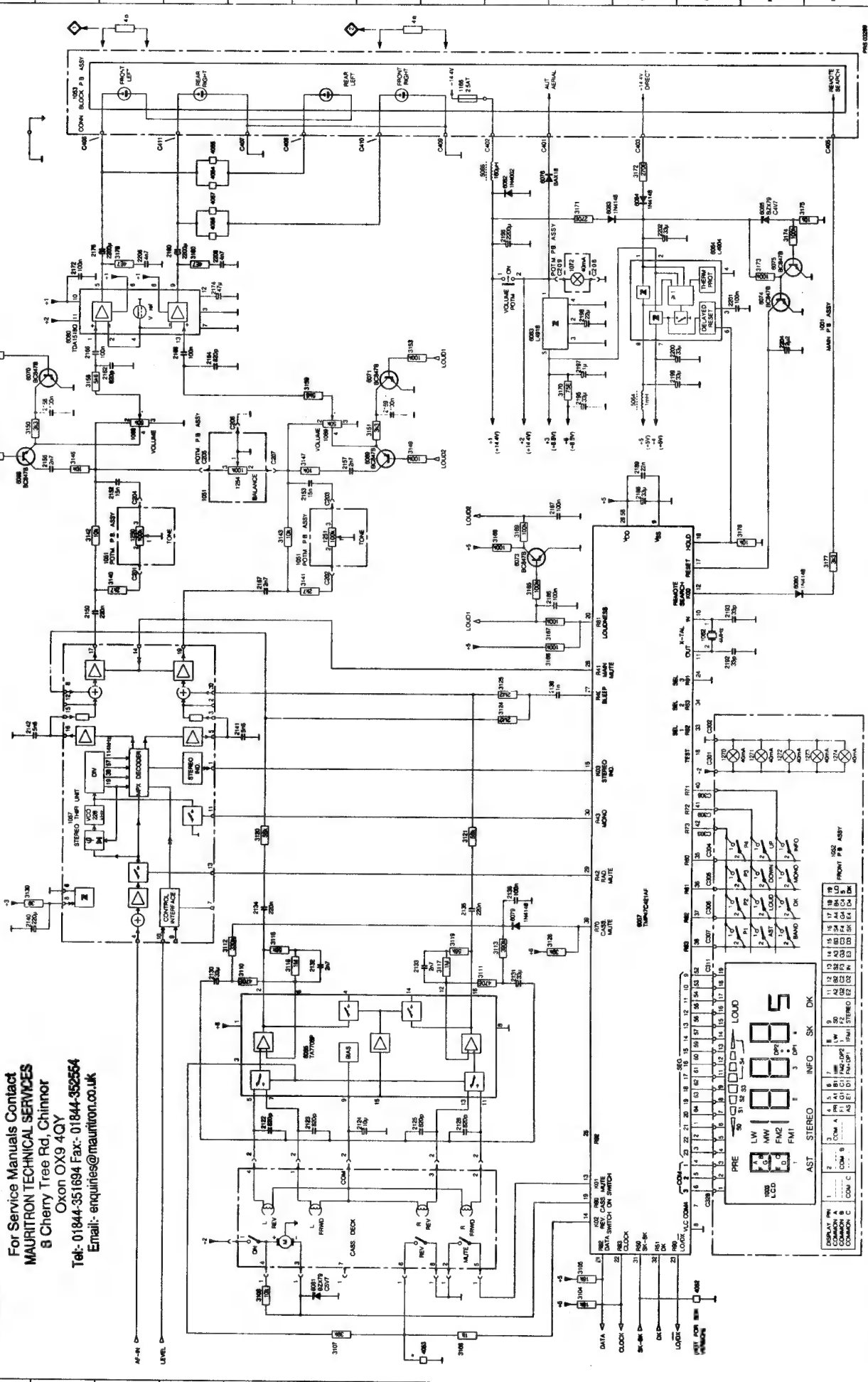
MAIN P.D. ASSY

PRE-03/98
 102-0507

1002 M3 1072 J18 1270 L16 2122 E4 2130 D7 2135 M6 2142 A10 2157 F15 2164 D16 2178 B16 2189 K15 2197 J18 2202 K18 3105 J2 3111 M7 3118 E7 3125 L11 3142 B13 3149 D15 3158 B14 3168 L13 3173 M8 3178 C18 4055 D19 5055 F5 6055 A14 6074 M7 6081 F2
 1003 L12 1280 C15 1272 M10 2124 S4 2132 F7 2138 J11 2152 C14 2156 B13 2166 D16 2180 Q15 2192 L12 2198 J17 2204 A12 2208 K16 2210 L12 2216 J18 2220 K18 2222 K18 3106 E2 3112 O7 3119 M7 3126 F7 3133 M8 3138 J7 3143 B13 3150 A13 3155 F3 3165 L13 3174 M8 3180 D18 4056 D19 5056 F5 6056 A14 6075 M7 6082 L16
 1004 C16 1281 E14 1273 M10 2125 G4 2133 G7 2140 A17 2153 F4 2158 Q16 2172 B16 2187 J14 2198 J18 2200 K18 2208 K18 3108 E2 3114 O7 3121 M7 3128 F7 3135 M8 3140 C19 3147 F18 3152 A13 3158 L14 3168 L13 3177 J18 3183 L19 4053 N1 5054 M18 6053 L17 6076 L18 6078 L18 6083 A19
 1005 A18 1284 E14 1274 M10 2126 M4 2134 G8 2141 B10 2148 B16 2162 G16 2174 D17 2186 A14 2196 L18 2201 L17 3110 J2 3117 M7 3124 L11 3131 F13 3148 A15 3153 G16 3167 F2 3172 K19 3177 M13 4054 D19 5055 M18 6054 L16 6073 L13 6080 M13 6085 M19

* NOT FOR SETS
 WITH FACILITATION

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12 224

SERVICING HINTS

SERVICE TEST PROGRAMME

The μ C test programme can be called without first entering the security code.

μ C test

This test is called by turning the set on while keeping the P1 and P2 keys depressed. Besides the RAM, a great number of μ C instructions are tested. If no faults occur, a special pattern will be displayed. (See fig. 1f) The test can be stopped by turning the set off.

Display test

The display test is called by turning the set on while keeping the P1 and P3 keys depressed. A number of easily recognizable patterns are then displayed in succession. (See figs. 1a to 1h) If you want to make one of the patterns visible for a longer time, you only have to keep the P1 key pressed for the required time.

SECURITY CODE

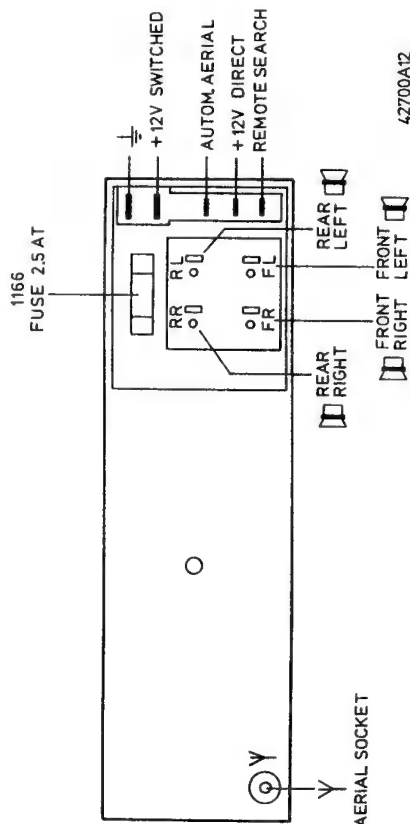
General

To reduce the risk of theft, this car radio has a built-in electronic lock. The security code has been entered in the factory and cannot be changed by the customer. The security code consists of four figures varying between "0000" and "9999". The figures are selected by pressing the UP and DOWN keys and are entered by pressing the P1 key. If you enter a wrong code, you will hear an error beep and after 1 minute you will be given a new opportunity to enter the right code. Each time a wrong code is entered, the waiting time is doubled, so 1, 2, 4, 8 etc. with a maximum of 32 minutes.

Note: If the set is presented for repair with the security code switched on, and the customer has not stated the right code, the set will not be able to function.

Replacing the eeprom by a "non-coded" eeprom and/or replacing the microprocessor will not help in that case.

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TECHNICAL DATA

General

Power supply : 14.4V DC
 Dimensions(w x h x d) : 180x51x150 mm
 Remote control unit : 22EN9875

Radio

LW : 144-288 kHz
 MW : 522-1611 kHz
 FM : 87.5-108 MHz
 IF-AM : 10.7 MHz
 IF-FM : 10.7 MHz
 Sensitivity 26 dB S/R : 160 μ V (LW)
 : 110 μ V (MW)
 : 4 μ V (FM)
 : 15 μ V
 : 150 μ V

Limitation α -3dB
 10 dB crosstalk

Cassette player

Number of tracks : 2x2
 Tape speed : 4.76 cm/sec
 Wow & Flutter : $\geq 0.35\%$
 Crosstalk : ≤ 30 dB

Amplifier

Output power (D $\leq 10\%$) : 2x5.2W ± 1 dB/4Q
 Loudness : 7 dB at 100 Hz
 : 6 dB at 10 kHz
 Tone control : -9 dB at 100 Hz
 : -14dB at 10 kHz

Working

ACTIVATING THE SECURITY CODE

Proceed as follows:

- Switch the set on while pressing the UP key.
- Now you hear a two-tone beep and the protection is activated.

The car radio will signal that the code has been activated by briefly showing in the display the character "-C-" at the moment of switching on the radio.

ENTRY OF THE CODE

Example: Suppose the code is 4567.

Action	Display shows	Note
- Switch on	-C-	
- Press P1		
- Select UP/DOWN "4"	4	first figure
- Press P1		
- Select UP/DOWN "5"	45	second figure
- Press P1		
- Select UP/DOWN "6"	456	third figure
- Press P1		
- Select UP/DOWN "7"	4567	fourth figure
- Press P1	confirmation tone

The radio is now on and you can operate the cassette player.

Now that the security code is active, the code should be entered again each time the supply voltage has been interrupted.

To indicate that the security code is activated, the display briefly shows the character "C" each time the set is turned on.

SWITCHING THE CODE OFF

Switch the set on while pressing the UP key. The display shows the indication "-C-". Enter the right code in the way described above. Two two-tone squeaks confirm that the security code is switched off.



All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).

Careless handling during repair can reduce service life drastically. When repairing, make sure that you are connected to the same potential as the mass of the set via a wrist wrap with resistance.

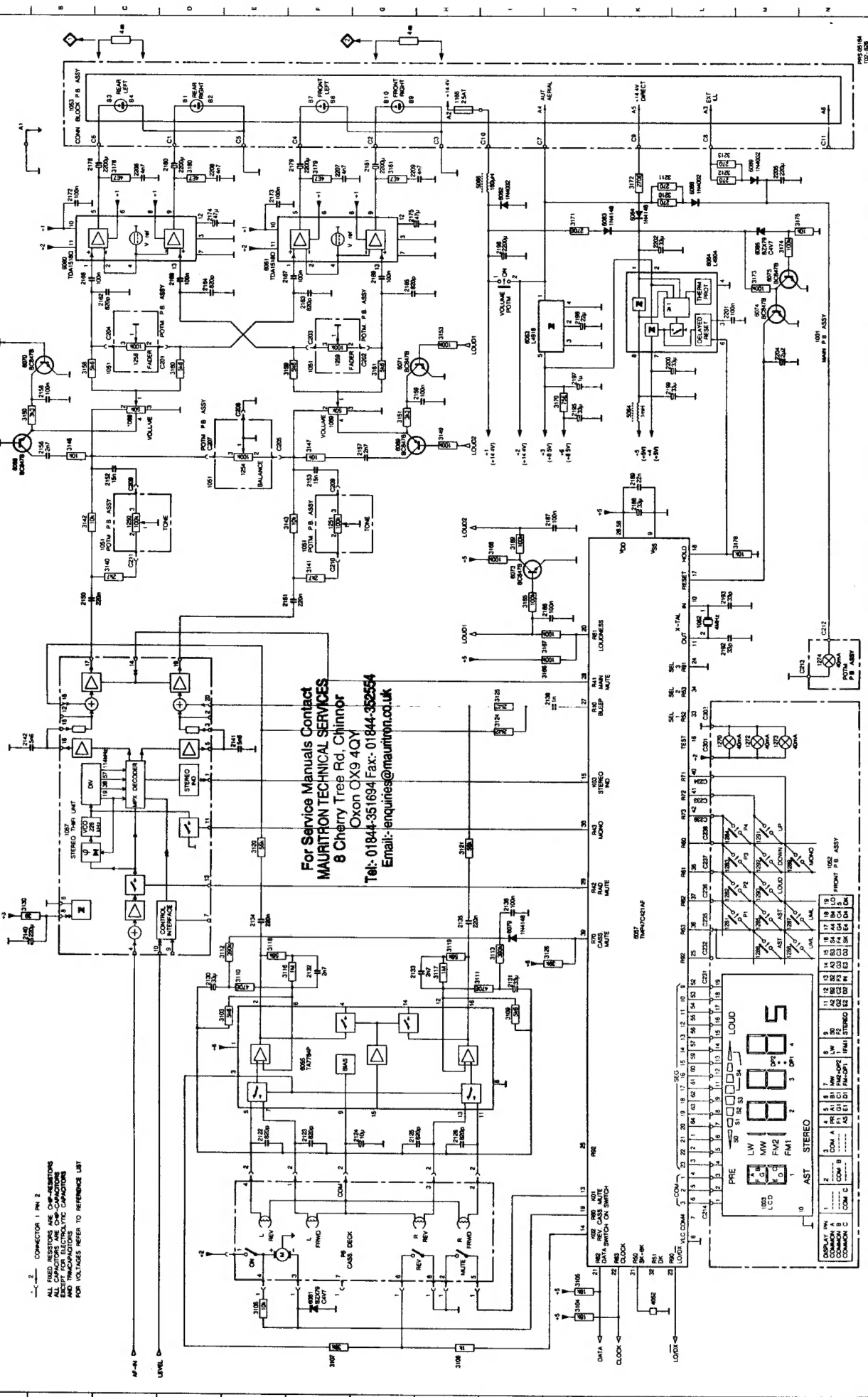
Keep components and tools also at this potential.

DC570: 2122, 2125 replaced by jumpers 3101, 3102.
Jumper 4053 added.

ALL FIXED RESISTORS ARE CHIP-RESISTORS
UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE IN OHMS
CAPACITOR VALUES ARE IN PICO-FARADS
AND TRIMMERS ARE IN KILOHMS
FOR VOLTAGE REFER TO REFERENCE LIST

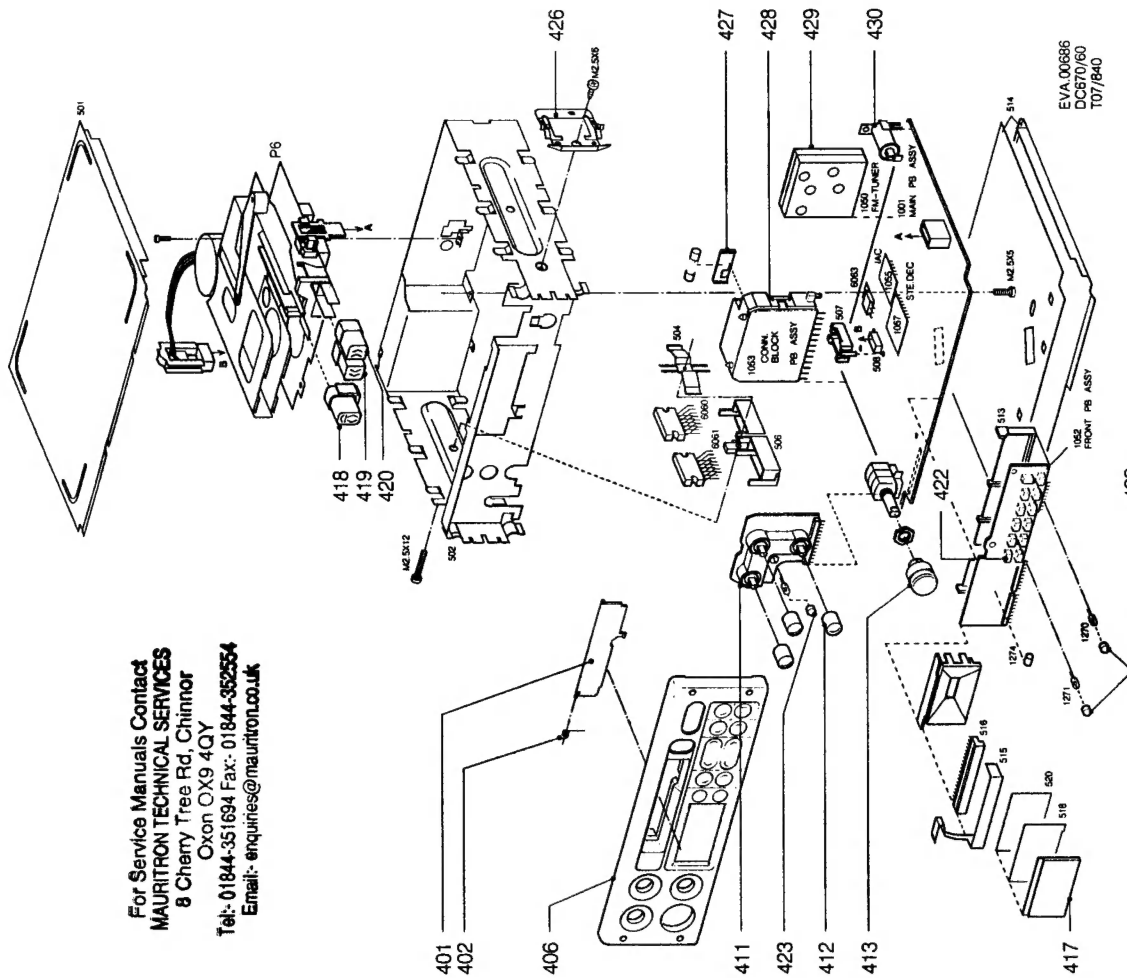
CONNECTION 1 PIN 2

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Check	SK	Ⓡ	Setting of controls	Ⓡ	Ⓡ
FM-Mute	FM	93 MHz, 1 mV no signal	Ⓡ	1 0dB (775 mV) -30dB ≤ -40dB	Ⓡ
26dB-SNR	FM	93 MHz, 4 μV Δf = 22.5 kHz f mod = 1 kHz 93MHz, 4μV without mod.	Ⓡ	1 0dB (775 mV) 1 ≥ 26dB	Ⓡ
	MW	990 kHz, 110 μV 1 kHz, 30% AM 990kHz, 110 μV without mod.	Ⓡ	1 0dB (775 mV) 1 ≥ 26dB	Ⓡ
Demodulated FM-levels	FM	93MHz, 1mV Δf = 22.5 kHz f mod = 1 kHz 93 MHz, 1 mV Δf = 6.75 kHz f mod. = 1 kHz	Ⓡ	4 200 mV ± 1dB 4 50 mV ± 1dB	Ⓡ
Demodulated FM level	FM	93 MHz, 1 mV Δf = 3.75 kHz f mod. = 57 kHz	Ⓡ	4 20 mV ± 1 dB	Ⓡ
Demodulated AM-level	MW	990 kHz, 1 mV 1kHz, 30% AM	Ⓡ	5 350 mV ± 1dB	Ⓡ
Cross talk	FM	93 MHz, 1 mV stereo signal 93 MHz, 1 mV stereo-R	Ⓡ	L 1 0dB (775 mV) R 2 - L 1 ≥ 21dB	Ⓡ
SDS/10dB Cross talk	FM	93 MHz, 1 mV stereo signal 93 MHz, 150 μV stereo-R	Ⓡ	L 1 0dB (775 mV) R 2 - L 1 = 10dB	Ⓡ
Search level FM	FM	93 MHz, 25μV	Ⓡ	6 2 V-DC	Ⓡ
Search level AM	MW	990 kHz, 70μV	Ⓡ	3 1.75 V-DC 7 ≥ 1.0 V-DC 7 ≤ 6.0 V-DC 8 ≥ 0.8 V-DC 8 ≤ 6.0 V-DC	Ⓡ
VC-FM	FM	87.5 MHz 108 MHz	Ⓡ		Ⓡ
VC-AM	LW MW	144 kHz 1611 kHz	Ⓡ		Ⓡ
I.A.C.	FM	Ⓡ T = 10 μsec T = 300 μsec Vp = 60 mV	Ⓡ		Ⓡ 25-50 μs

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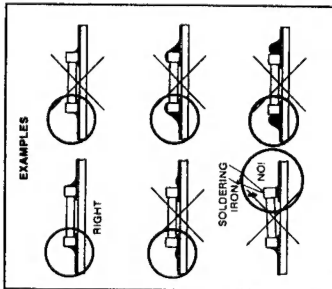
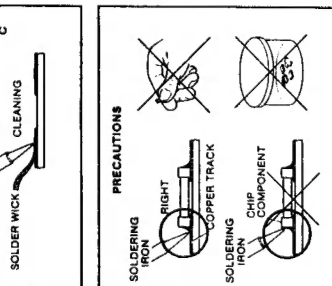
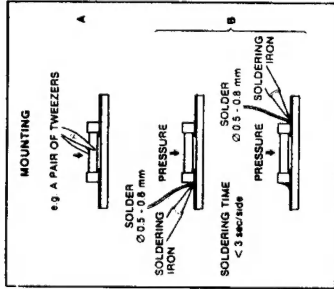
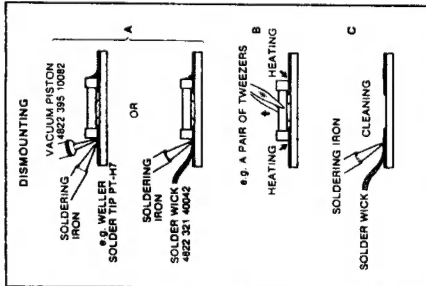
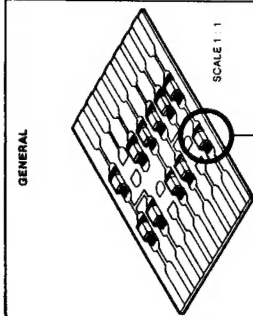


401 4822 443 62676 (570)
401 4822 443 62271
402 4822 492 422-1
406* 4822 423 50944 (570/60E)
406* 4822 423 50932 (670/60)
406* 4822 423 50939 (670/60E)
411 4822 214 51739
412 4822 413 41479
413 4822 413 41481
417 4822 130 90499
418 4822 410 20902 (570)
418 4822 410 26735 (670)
419 4822 318 40380 (570)
419 4822 410 26738 (670)
420 4822 318 40380 (570)
420 4822 410 26736 (670)
422 4822 276 12469
423 4822 134 40921
426 4822 492 63822
427 4822 256 30338
428 4822 267 50859
429 4822 210 10305
430 4822 267 30883
* Incl. items 401, 402
EVA.00686
DC870/60
T07/R40

- MISCELLANEOUS -		-II-	
1055	IAC,Thifi	4822 214 51876	2168
1057	STEREO DEC, Thifi	4822 214 51877	2168
1059	Cer.Filiter 10.7 MHz	4822 242 72076	2172
1060	Cer.Filiter 10.7 MHz	4822 242 72076	2178
1061	Crystal 4 MHz	4822 242 71881	2180
1062	Crystal 4 MHz	4822 242 71882	2186
1064	Cer.Filiter 10.7 MHz	4822 242 71883	2187
1065	Cer.Filiter 10.7 MHz	4822 242 71883	2192
1068	Potm.Volume 2X50kQ	4822 101 40145	2193
1166	Fuse 2.5A(T)	4822 253 30026	2196
1250/1251	Potm.Tone 2X100kQ	4822 102 30462	2201
1254	Potm.Balance 100kQ	4822 100 20563	2204
	Lamp 14V-40mA	4822 134 40867	2206
	Lamp 14V orange	4822 134 40921	2208
-II-		-II-	
2050	100nF 20%	4822 122 33104	3050
2051	47 nF	4822 122 33211	3051
2055	100nF 20%	4822 122 33104	3052
2056	10 nF	4822 122 31728	3053
2057	47 nF	4822 122 33211	3054
2061	2.2uF	4822 124 20706	3055
2062	150pF	4822 122 33181	3056
2063	270pF	4822 122 33216	3057
2064	220nF 20%	4822 122 32916	3060
2068	220nF 20%	4822 122 32916	3061
2070	390pF 20%	4822 122 33172	3064
2074	220nF 20%	4822 122 32916	3065
2076	220nF 20%	4822 122 32916	3067
2083	27 pF	4822 122 33214	3068
2088	10 pF	4822 122 33212	3069
2089	33 pF	4822 122 33215	3070
2090	270pF 20%	4822 122 33216	3072
2091	270pF 20%	4822 122 33216	3073
2092	10 nF	4822 122 33177	3074
2097	220nF 20%	4822 122 32916	3075
2099	150pF	4822 122 33222	3076
2106	100nF 20%	4822 122 33104	3077
2109	22 pF	4822 122 33213	3079
2110	100nF 20%	4822 122 33104	3080
2114	4.7nF	4822 122 33217	3082
2115	3.3nF	4822 122 33219	3083
2118	220uF	4822 124 41453	3084
2120	10 pF	4822 122 33212	3086
2121	10 pF	4822 122 33212	3087
2122	820pF	4822 122 33218	3090
2123	820pF	4822 122 33218	3091
2125	820pF	4822 122 33218	3095
2126	820pF	4822 122 33218	3096
2132	2.7nF	4822 122 33176	3099
2133	2.7nF	4822 122 33176	3100
2134	220nF 20%	4822 122 32916	3104
2135	220nF 20%	4822 122 32916	3105
2136	100nF 20%	4822 122 33104	3106
2140	220uF	4822 124 22409	3107
2141	5.6nF	4822 122 33221	3108
2142	5.6nF	4822 122 33221	3110
2150	220nF 20%	4822 122 32916	3111
2151	220nF 20%	4822 122 32916	3112
2156	1.8nF	4822 122 33144	3113
2157	1.8nF	4822 122 33144	3114
2158	100nF	4822 122 33209	3115
2162	820pF	4822 122 33218	3116
2164	820pF	4822 122 33218	3116







	3117	1M	4822 111 91509	5050	4822 156 11081
	3118	56k	4822 111 91535	5052	4822 157 50975
	3119	56k	4822 111 91535	5054	4822 152 20677
	3120	56k	4822 111 91535	5055	4822 152 20677
	3121	56k	4822 111 91535	5056	4822 152 20677
	3124	2M2	4822 111 91511	5057	4822 152 20679
	3125	2M2	4822 111 91511	5059	4822 157 50975
	3126	39k	4822 111 91528	5060	4822 152 20682
	3130	390k	4822 111 91502	5061	4822 152 20683
	3140	2K7	4822 111 91525	5062	4822 152 20678
	3141	2K7	4822 111 91525	5064	4822 157 50975
	3142	10k	4822 111 91517	5066	4822 152 20681
	3143	10k	4822 111 91517		
	3146	15k	4822 111 91498		
	3147	15k	4822 111 91498		
	3148	100k	4822 111 91518	BAX14	4822 130 34193
	3149	100k	4822 111 91518	BAX18	4822 130 34121
	3150	3K3	4822 111 91526	BBY40	5322 130 80119
	3151	3K3	4822 111 91526	BZX79/B5V1	4822 130 34233
	3152	100k	4822 111 91518	BZX79/B5V6	4822 130 34173
	3153	100k	4822 111 91518	BZX79/C4V7	4822 130 34174
	3158	5K6	4822 111 91534	1N4002	5322 130 30684
	3159	5K6	4822 111 91534	1N4148	4822 130 30621
	3161	5K6	4822 111 91534		
	3165	100k	4822 111 91518		
	3166	100k	4822 111 91518		
	3167	100k	4822 111 91518		
	3168	100k	4822 111 91518		
	3169	100k	4822 111 91518		
	3170	75E	4822 111 91506		
	3171	270E	4822 111 91499	TEA6100N2	4822 209 72251
	3172	270E	4822 111 91499	TEA6057	4822 209 72248
	3173	100k	4822 111 91518	TEA6200	4822 209 72247
	3174	100k	4822 111 91518	X24021	4822 209 72802
	3175	10k	4822 111 91517	TA7784P	4822 209 71871
	3176	10k	4822 111 91517	TMP47C421AF	4822 209 72254
	3177	680E	4822 111 91504	TDA1518Q	4822 209 72249
	3178	4E7	4822 116 80464	L4918	4822 209 72253
	3179	4E7	4822 116 80464	L4904	4822 209 72252
	3180	4E7	4822 116 80464		
	3204	22k	4822 111 91523		
	4050	0E	4822 111 91536		
	4051	0E	4822 111 91536		
	4052	0E	4822 111 91536		









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27 037C

Chips 50 V NPO S1206			Chips 0.125 W S1206			Chips 0.125 W S1206			1U		
1 pF	5%	4822 122 32479	4.7 E	5%	5322 111 90376	6.8 k	2%	4822 111 90544	6.8 k	2%	4822 111 90544
1.2 pF	5%	4822 122 33013	5.6 E	5%	4822 111 90393	7.5 k	2%	4822 111 90276	7.5 k	2%	4822 111 90276
1.5 pF	5%	4822 122 31792	6.2 E	5%	4822 111 90395	9.1 k	2%	4822 111 90373	9.1 k	2%	4822 111 90373
1.8 pF	5%	4822 122 32087	7.5 E	5%	4822 111 90396	10 k	2%	4822 111 90249	10 k	2%	4822 111 90249
2.2 pF	5%	4822 122 32425	8.2 E	5%	4822 111 90397	11 k	2%	4822 111 90253	11 k	2%	4822 111 90253
3.3 pF	5%	4822 122 32079	9.1 E	5%	4822 111 90398	12 k	2%	4822 111 90509	12 k	2%	4822 111 90509
3.9 pF	5%	4822 122 32081	10 E	5%	4822 111 90095	13 k	2%	4822 111 90196	13 k	2%	4822 111 90196
4.7 pF	5%	4822 122 32082	11 E	5%	4822 111 90338	15 k	2%	4822 111 90346	15 k	2%	4822 111 90346
5.6 pF	5%	4822 122 32505	12 E	5%	4822 111 90343	16 k	2%	4822 111 90238	16 k	2%	4822 111 90238
6.8 pF	5%	4822 122 32507	13 E	5%	4822 111 90344	18 k	2%	4822 111 90349	18 k	2%	4822 111 90349
8.2 pF	5%	4822 122 31971	15 E	5%	4822 111 90347	20 k	2%	4822 111 90251	20 k	2%	4822 111 90251
10 pF	5%	4822 122 32139	16 E	5%	4822 111 90347	22 k	2%	4822 111 90512	22 k	2%	4822 111 90512
12 pF	5%	4822 122 32504	18 E	5%	4822 111 90139	24 k	2%	4822 111 90542	24 k	2%	4822 111 90542
15 pF	5%	4822 122 31769	20 E	5%	4822 111 90352	27 k	2%	4822 111 90216	27 k	2%	4822 111 90216
18 pF	5%	4822 122 31837	22 E	5%	4822 111 90186	30 k	2%	4822 111 90267	30 k	2%	4822 111 90267
22 pF	10%	4822 122 31966	24 E	5%	4822 111 90355	33 k	2%	4822 111 90514	33 k	2%	4822 111 90514
27 pF	5%	4822 122 31756	27 E	5%	4822 111 90105	36 k	2%	4822 111 90108	36 k	2%	4822 111 90108
33 pF	5%	4822 122 31972	30 E	5%	4822 111 90356	39 k	2%	4822 111 90363	39 k	2%	4822 111 90363
39 pF	5%	4822 122 31772	33 E	5%	4822 111 90357	43 k	2%	4822 111 90543	43 k	2%	4822 111 90543
47 pF	5%	4822 122 31774	36 E	5%	4822 111 90359	47 k	2%	4822 111 90274	47 k	2%	4822 111 90274
56 pF	5%	4822 122 31961	39 E	5%	4822 111 90361	51 k	2%	4822 111 90573	51 k	2%	4822 111 90573
68 pF	5%	4822 122 31839	47 E	5%	4822 111 90125	56 k	2%	4822 111 90202	56 k	2%	4822 111 90202
82 pF	10%	4822 122 31765	51 E	5%	4822 111 90217	62 k	2%	4822 111 90574	62 k	2%	4822 111 90574
100 pF	5%	4822 122 31766	56 E	5%	4822 111 90239	68 k	2%	4822 111 90575	68 k	2%	4822 111 90575
120 pF	5%	4822 122 31767	62 E	5%	4822 111 90267	75 k	2%	4822 111 90277	75 k	2%	4822 111 90277
150 pF	5%	4822 122 31794	68 E	5%	4822 111 90293	82 k	2%	4822 111 90214	82 k	2%	4822 111 90214
180 pF	5%	4822 122 31965	75 E	5%	4822 111 90371	91 k	2%	4822 111 90269	91 k	2%	4822 111 90269
220 pF	5%	4822 122 32142	82 E	5%	4822 111 90124	100 k	2%	4822 111 90568	100 k	2%	4822 111 90568
270 pF	5%	4822 122 31642	91 E	5%	4822 111 90375	110 k	2%	4822 111 90511	110 k	2%	4822 111 90511
330 pF	10%	4822 122 31771	100 E	5%	4822 111 90091	120 k	2%	4822 111 90513	120 k	2%	4822 111 90513
390 pF	5%	4822 122 31772	110 E	5%	4822 111 90091	130 k	2%	4822 111 90515	130 k	2%	4822 111 90515
470 pF	5%	4822 122 31773	120 E	5%	4822 111 90335	150 k	2%	4822 111 90182	150 k	2%	4822 111 90182
560 pF	5%	4822 122 31775	130 E	5%	4822 111 90339	160 k	2%	4822 111 90161	160 k	2%	4822 111 90161
680 pF	5%	4822 122 31974	150 E	5%	4822 111 90098	180 k	2%	4822 111 90364	180 k	2%	4822 111 90364
820 pF	5%	4822 122 31647	160 E	5%	4822 111 90345	200 k	2%	4822 111 90215	200 k	2%	4822 111 90215
1 nF	10%	4822 122 31807	180 E	5%	4822 111 90348	220 k	2%	4822 111 90302	220 k	2%	4822 111 90302
1.2 nF	5%	4822 122 31781	200 E	5%	4822 111 90178	240 k	2%	4822 111 90513	240 k	2%	4822 111 90513
1.5 nF	10%	4822 122 32153	220 E	5%	4822 111 90353	270 k	2%	4822 111 90515	270 k	2%	4822 111 90515
1.8 nF	10%	4822 122 31644	240 E	5%	4822 111 90156	300 k	2%	4822 111 90168	300 k	2%	4822 111 90168
2.2 nF	10%	4822 122 31783	270 E	5%	4822 111 90288	330 k	2%	4822 111 90161	330 k	2%	4822 111 90161
2.7 nF	10%	4822 122 31969	300 E	5%	4822 111 90368	360 k	2%	4822 111 90169	360 k	2%	4822 111 90169
3.3 nF	10%	4822 122 32566	330 E	5%	4822 111 90362	400 k	2%	4822 111 90368	400 k	2%	4822 111 90368
3.9 nF	10%	4822 122 31784	360 E	5%	4822 111 90109	430 k	2%	4822 111 90369	430 k	2%	4822 111 90369
4.7 nF	10%	4822 122 31916	400 E	5%	4822 111 90245	470 k	2%	4822 111 90205	470 k	2%	4822 111 90205
5.6 nF	10%	4822 122 31976	430 E	5%	4822 111 90113	510 k	2%	4822 111 90374	510 k	2%	4822 111 90374
6.8 nF	10%	4822 122 31728	470 E	5%	4822 111 90366	560 k	2%	4822 111 90252	560 k	2%	4822 111 90252
10 nF	10%	4822 122 31648	510 E	5%	4822 111 90366	620 k	2%	4822 111 90412	620 k	2%	4822 111 90412
12 nF	10%	4822 122 31782	560 E	5%	4822 111 90138	680 k	2%	4822 111 90414	680 k	2%	4822 111 90414
15 nF	10%	4822 122 31759	620 E	5%	4822 111 90162	750 k	2%	4822 111 90415	750 k	2%	4822 111 90415
18 nF	10%	4822 122 32542	680 E	5%	4822 111 90306	820 k	2%	4822 111 90416	820 k	2%	4822 111 90416
22 nF	10%	4822 122 31797	750 E	5%	4822 111 90171	910 k	2%	4822 111 90417	910 k	2%	4822 111 90417
27 nF	10%	4822 122 32541	820 E	5%	4822 111 90372	1 M	2%	4822 111 90418	1 M	2%	4822 111 90418
33 nF	10%	4822 122 31981	910 E	5%	4822 111 90092	1.1 M	5%	4822 111 90408	1.1 M	5%	4822 111 90408
39 nF	10%	4822 122 32542	1 k	2%	4822 111 90335	1.2 M	5%	4822 111 90409	1.2 M	5%	4822 111 90409
47 nF	10%	4822 122 32183	1.1 k	2%	4822 111 90096	1.3 M	5%	4822 111 90411	1.3 M	5%	4822 111 90411
56 nF	10%	4822 122 31947	1.2 k	2%	4822 111 90244	1.5 M	5%	4822 111 90412	1.5 M	5%	4822 111 90412
100 nF	10%	4822 122 32915	1.3 k	2%	4822 111 90151	1.6 M	5%	4822 111 90413	1.6 M	5%	4822 111 90413
180 nF	10%	4822 122 32715	1.5 k	2%	4822 111 90165	1.8 M	5%	4822 111 90414	1.8 M	5%	4822 111 90414
220 nF	20%	4822 122 32715	1.6 k	2%	4822 111 90289	2 M	5%	4822 111 90415	2 M	5%	4822 111 90415
Chips 0.125 W S1206 NPO			1.8 k	2%	4822 111 90101	2.2 M	5%	4822 111 90416	2.2 M	5%	4822 111 90416
jumper			2 k	2%	4822 111 90165	2.7 M	5%	4822 111 90417	2.7 M	5%	4822 111 90417
0 E	5%	4822 111 90163	2.2 k	2%	4822 111 90248	3 M	5%	4822 111 90418	3 M	5%	4822 111 90418
1 E	5%	4822 111 90184	2.4 k	2%	4822 111 90381	3.3 M	5%	4822 111 90419	3.3 M	5%	4822 111 90419
1.1 E	5%	4822 111 90377	2.7 k	2%	4822 111 90382	3.6 M	5%	4822 111 90421	3.6 M	5%	4822 111 90421
1.2 E	5%	4822 111 90378	3 k	2%	4822 111 90383	4 M	5%	4822 111 90422	4 M	5%	4822 111 90422
1.3 E	5%	4822 111 90379	3.3 k	2%	4822 111 90384	4.7 M	5%	4822 111 90423	4.7 M	5%	4822 111 90423
1.5 E	5%	4822 111 90381	3.6 k	2%	4822 111 90104	5.1 M	5%	4822 111 90424	5.1 M	5%	4822 111 90424
1.6 E	5%	4822 111 90382	3.9 k	2%	4822 111 90385	5.6 M	5%	4822 111 90425	5.6 M	5%	4822 111 90425
1.8 E	5%	4822 111 90383	4.7 k	2%	4822 111 90386	6.2 M	5%	4822 111 90426	6.2 M	5%	4822 111 90426
2 E	5%	4822 111 90384	5.1 k	2%	4822 111 90387	6.8 M	5%	4822 111 90427	6.8 M	5%	4822 111 90427
2.2 E	5%	4822 111 90104	5.6 k	2%	4822 111 90388	7.5 M	5%	4822 111 90428	7.5 M	5%	4822 111 90428
2.4 E	5%	4822 111 90385	6.2 k	2%	4822 111 90389	8.2 M	5%	4822 111 90429	8.2 M	5%	4822 111 90429
2.7 E	5%	4822 111 90386	6.8 k	2%	4822 111 90391	9.1 M	5%	4822 111 90430	9.1 M	5%	4822 111 90430
3 E	5%	4822 111 90387	7.5 k	2%	4822 111 90392	10 M	5%	4822 111 90431	10 M	5%	4822 111 90431
3.3 E	5%	4822 111 90388	8.2 k	2%							
3.6 E	5%	4822 111 90389	9.1 k	2%							
3.9 E	5%	4822 111 90391	10 M	5%							
4.3 E	5%	4822 111 90392									

	Carbon film 0.2 W	70°C	5%
	Carbon film 0.33 W	70°C	5%
	Metal film 0.33 W	70°C	5%
	Carbon film 0.5 W	70°C	5%
	Carbon film 0.67 W	70°C	5%
	Carbon film 1.15 W	70°C	5%
© Chip component			

	Ceramic plate Tuning ≤ 120 pF NP.0 Others	2% -20/+80%
	Polyester flat foil	10%
	Metalized polyester flat film	10%
	Polyester flat foil small size (Mylar)	10%
	Polystyrene film/foil	1%
	Tubular ceramic	
	Miniature single	
	Subminiature tantalum	$\pm 20\%$

*a	= 2.5 V
b	= 4 V
c	= 6.3 V
d	= 10 V
e	= 16 V
f	= 25 V
g	= 40 V
h	= 63 V
i	= 100 V
j	= 125 V
k	= 150 V
l	= 160 V
m	= 180 V
n	= 200 V
o	= 250 V
p	= 300 V
q	= 350 V
r	= 400 V
s	= 500 V
t	= 630 V
u	= 800 V
v	= 1000 V
w	= 1.6 V
x	= 6 V
y	= 12 V
z	= 15 V
A	= 20 V
B	= 35 V
C	= 50 V
D	= 75 V
E	= 100 V
F	= 150 V
G	= 200 V
H	= 250 V
I	= 300 V